STATICS

Summary of Lectures

The summary of the lectures on theoretical mechanics (part "Statics") in English. The abstract is intended for the students of all specialties.

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Introduction

This summary of the lectures is compounded by the authors on a foundation of the known references on theoretical mechanics /1-11/ and is intended for the students learning course of theoretical mechanics in English .

The progress of technology confronts the engineer with a wide variety of problems connected with the design, manufacture and operation of various machines, motors and structures. Despite the diversity of problems that arise, their solution at least in part, is based on certain general principles common to all of them, namely, the laws governing the motion and equilibrium of material bodies.

The science, which treats of the general laws of motion and equilibrium of material bodies, is called theoretical, or general, mechanics. Theoretical mechanics constitutes one of the scientific bedrocks of modern engineering.

By motion in mechanics we mean mechanical motion, i.e., any change in the relative positions of material bodies in space which occurs in the course of time.

According to the nature of the problems treated, mechanics is divided into statics, kinematics, and dynamics. Statics studies the forces and the conditions of equilibrium of material bodies subjected to the action of forces. Kinematics deals with the general properties of the motion of bodies. Dynamics studies the laws of motion of material bodies under the